GEOGRAPHIC NEWS BULLETINS

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Contents for Week of January 6, 1930. Vol. VIII. No. 24.

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THREE CHINESE BOATMEN SHOW HOW TO USE CHOPSTICKS

(See Bulletin No. 3)

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Cross Out Trondhjem, Insert Nidaros—But Be Ready to Change Again

TAKE out your pencils and get ready to cross a name off the map.

About one-third the distance up the coast of Norway can be found the place named Trondhjem. On January 1, 1930, by government edict, Trondhjem ceased to be Trondhjem and became Nidaros. The Norwegian port has resumed the title it bore until about the year 1550.

But, in three days, the old name may be restored. Because thousands of the citizens have petitioned the Norwegian Storting (Parliament) to restore the name, "Trondhjem." And the Storting meets on January 3.

Modern Nidaros is built on a peninsula formed by the River Nid and the Trondhjem fiord which indents Norway's west coast. Its houses are cheerful frame structures painted in white or light colors, with potted plants making colorful spots at their windows. The royal palace, a huge, white building, is one of the largest wooden buildings in the world.

The shops have many unusual wares for visitors. Furs are sold, and there is a demand for blue and silver fox, polar bear and ermine. Eider-down quilts, bear-skin rugs, embroideries, carved wood souvenirs, and silver hammered in old Norse designs are popular with tourists. Many of the larger shops are on Olaf Tryggvesson Street, which was named after the town's founder.

City Has Survived 15 Fires

Nidaros has survived fifteen fires, and to prevent future conflagrations from spreading the principal streets have been widened to 100 feet or more. These wide streets give the place a spacious air. Nidaros is a city of wood. With the exceptions of the Cathedral and some modern business buildings, the houses and warehouses are all frame.

Although it lies in the same latitude as southern Iceland, Nidaros has summers like those of England, and its winters are no more severe than those of Germany. The river of the fiord is seldom frozen. In summer numerous trees and shrubbery give the town the appearance of a more southern city.

The long Arctic summer daylight has its effect on the farmlands surrounding Nidaros. Often there are two harvests a year of a crop which yields but one harvest in temperate climates.

Where Norway Crowns Its King

Nidaros was the coronation place of ancient Norse kings, and the present king, Haakon VII, was crowned there in 1906, when the union of Sweden and Norway was dissolved. The city has a population of some 55,000. Much of its life centers about the waterfront. The shipbuilding industry is brisk, and there is a boat service between Nidaros and Bergen and the North Cape. Numerous fishing boats come in with their cargoes of salted herring to be deposited in the tall, quaint warehouses which line the quays.

The tall Gothic spires of Nidaros Cathedral rise above the surrounding low buildings of purely Norse architecture, in striking contrast to them. The Cathedral

UMI

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THE QUESTION, "HOW OLD IS PUEBLO BONITO?" STARTED A LONG QUEST WHICH HAS JUST ENDED

When the National Geographic Society expedition cleared away the sand and dirt that had collected in this Indian apartment house for centuries, they found old beams that once supported roofs. How cross-sections of these timbers finally yielded the date when Pueblo Bonito was occupied is told in Bulletin No. 2. This communal dwelling reached the height of its glory when William the Conqueror was invading England.

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Expeditions Find 1,200-Year Calendar of American Indian Civilization in Tree Rings

WHEN were the cliff dwellings of the Southwest United States built by the Indians?

How long before Columbus landed did 1,200 Indians live in the colossal adobe apartment house at Pueblo Bonito, New Mexico?

Those were questions asked by travelers and students. Archaeologists could not answer them. But at last the solution has been found.

The method of solving the mystery is a new one. Everyone knows that the finger-prints of each person differ; that the circles left by inked fingers on paper are not alike. Similarly the annual circles of tree growth, plainly visible when a plank is sawed across the grain, differ from year to year.

Pueblo Bonito a Live Town when William the Conqueror Sailed to England

By collecting 5,000 tree-ring cross-sections from old and new wood, archaeologists have "finger-printed" the history of Indian civilization in the Southwest. They now know, just as well as a person knows his own age, that Pueblo Bonito was a live town, filled with busy residents grinding corn, making turquoise beads, feeding pet parrots and fashioning weapons, in the year 1066 when William the Conqueror sailed from Normandy to conquer England.

Two series of National Geographic Society expeditions followed the clues that have resulted in the discovery. The quest extended over years.

One series, comprising eight expeditions led by Neil M. Judd, explored the world-famous Pueblo Bonito ruins in Chaco Canyon, New Mexico, and patiently dug from tons of earth hundreds of art objects, household utensils and ceremonial trinkets. The other series, led by Dr. A. E. Douglass, studied tree rings from Pueblo Bonito and dozens of other ruins.

Discovery Gives Dates to Forty Indian Ruins

Of the daily lives of the people at the giant apartment house at Pueblo Bonito and other Indian ruins in the Southwest, we long have known as much as we do of the early Egyptians, Babylonians, or Persians.

As travelers stood in amazement before one or another of the ruins of these marvelous civilizations of our own continent their almost invariable question has been, "How old is it?" And that has been the one question which archaeologists could not answer.

Dr. Gilbert Grosvenor, president of the National Geographic Society, in assessing the value of the finds of the expeditions, says:

"They have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic.

"They have discovered not only the age of the great communal dwelling of Pueblo Bonito, metropolis of our aboriginal Southwest, but also have dated some forty other ruins whose time of occupancy hitherto had been unknown.

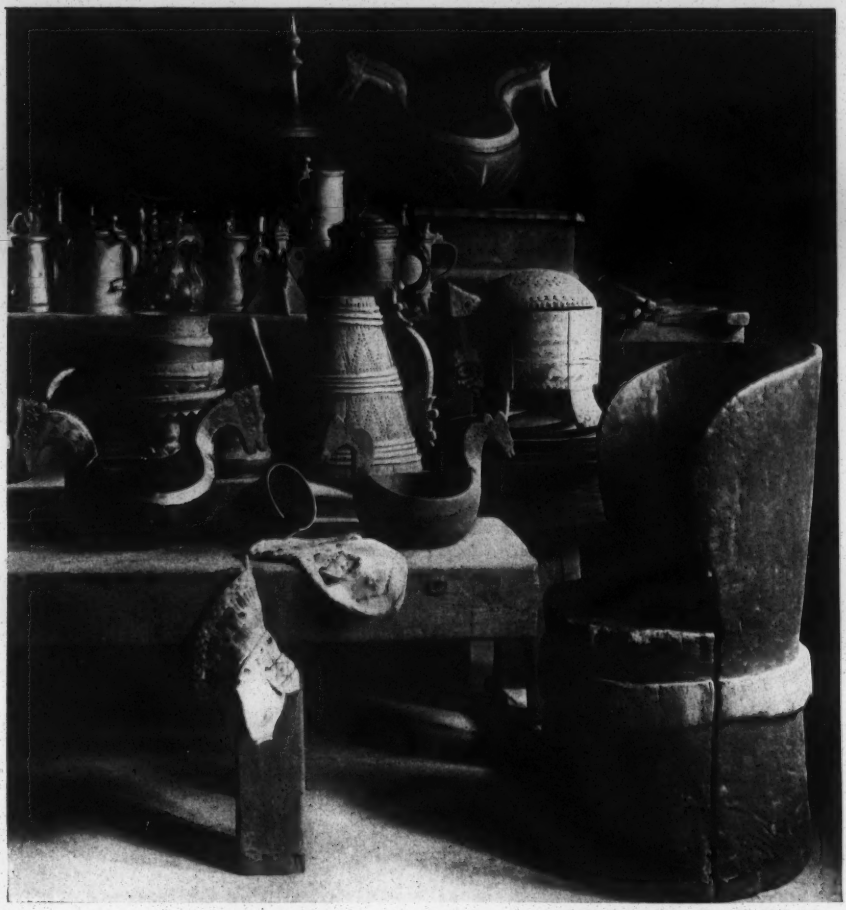
"Moreover, they have developed a tree-ring calendar which can be applied to all early ruins in which datable timbers exist.

"A collateral finding of great interest, yet to be developed, is the possible relation between the weather cycles clearly revealed in this tree-ring calendar of the

looks like a transplanted English church in a Norse setting. The structure was begun during the reign of Olaf the Quiet, between 1066 and 1093. It has been restored many times, but each restorer has kept to the Gothic style, and the present restoration has endeavored to follow the original building.

Note: The Scandinavian countries are often studied as a group. For this purpose three authoritative and profusely illustrated articles in the *National Geographic Magazine* are useful for reference and assigned reading: "Norway and the Norwegians," June, 1924; "Denmark and the Danes," August, 1922; and "Sweden, Land of White Birch and White Coal," October, 1928. See also references to the Scandinavians in "The Races of Europe," by Dr. Edwin A. Grosvenor, December, 1918.

Bulletin No. 1, January 6, 1930.



© *Photograph by Donald McLeish*

WASSAIL BOWLS FROM WHICH THE VIKINGS DRANK

The dragon design the Vikings used on their ships they also used for their drinking bowls. Old Viking chiefs used the chair and the utensils which are relics of the golden age of Scandinavian power and are now on display in the Bergen Museum.

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U. S. Gunboats to the Rescue, 1,000 Miles Up River in China's Interior

ONE thousand miles up river in Chinese territory, women and children, seeking safety, boarded American gunboats.

As far from the seacoast as St. Louis is from New Orleans bluejackets from ships of the U. S. Navy guarantee protection to American citizens.

Ichang, a center of conflict in China's latest troubles, is one of the principal bases of the United States' Yangtze fleet. Six gunboats, specially built, make up the fleet.

The Yangtze Patrol in Terms of the Mississippi

The boats of this unique flotilla of the Navy, situated half around the world from the United States, will probably never anchor in a port of the land whose flag they fly. They were built in Shanghai, are of shallow draft suitable only for river use, and will probably wear out as their predecessors of the Yangtze Patrol have, in service on China's greatest river.

One can understand the relation between the Yangtze cities and the Yankee gunboats by substituting the Mississippi River for the Yangtze and by imagining a flotilla of Chinese gunboats plying the Father of Waters. New Orleans would stand approximately in the place of Shanghai, the great doorway city to the river. Memphis would represent Hankow, huge industrial center, while St. Louis would stand about as far from the sea as does Ichang.

Continuing up the Missouri River, one would find Kansas City about in the relative position of Chungking, while Omaha, 1,500 miles from the sea, would stand for Suifu, an equal distance from the mouth of the Yangtze. In the imaginary American Yangtze, the visiting Chinese gunboats would look to St. Louis (Ichang) as their chief base, but would spend most of their time patrolling the river above that point, ascending, during high water, as far as Omaha (Suifu).

Ichang Is the Gateway to Populous Szechwan

Ichang maintains its commercial importance on the river because of the great Yangtze gorges that extend from just above the city for a distance of more than 125 miles. Above the gorges the great river flows through China's richest province, Szechwan, a region teeming with people, producing much material for shipment, and demanding great quantities of the products of the outside world.

No railroads reach Szechwan; all its exports and imports must move along the Yangtze; and because of the rapids in the gorges, Ichang takes a toll from all this busy river traffic. For Ichang is the head of navigation for good-sized river steamers. Every bale and package of freight for Szechwan must be unloaded at Ichang and transferred to small, specially constructed steamers or to junks for transport through the gorges.

For ages the Yangtze has been the trade highway into Szechwan, and, until 1901, all traffic was carried on in junks, laboriously hauled up the rapids by trackers who walked along the slippery rocks and tugged at great hawsers Even in those days Ichang was important as the gateway to the gorges. In 1901 steam first began to compete with the junk men. Specially built, small, light-draft boats, fitted

southwestern United States and similar cyclic variations being recorded by a third National Geographic Society Expedition (in conjunction with the Smithsonian Institution), an expedition which still is in the field, at Mount Brukkaros, South West Africa, making daily observations of solar radiation."

Dr. Douglass, in his report to the National Geographic Society, writes:

"Just as the far-famed Rosetta Stone provided the key to the written mysteries of ancient Egypt, so the collection of an unbroken series of tree rings has made clear the chronology of the Southwest.

When the Moors Invaded Spain History Was Making in Unknown America

"These researches have carried the calendar back to A.D. 700 in the Southwest, and they have provided the beginnings of a continuous weather chart for 1,200 years.

"Through this work we have learned of some outstanding events in America which were contemporaneous with the conquest of Spain by the Moors; and we know that certain Pueblo Indian settlements were enjoying their golden ages when William the Conqueror faced Harold the Saxon at the Battle of Hastings.

"The earliest beam we recovered from Pueblo Bonito was cut A.D. 919 from a tree that was 219 years old when cut. Pueblo Bonito had reached its golden age in 1067 and was still occupied in 1127."

In many instances, Dr. Douglass' report points out, one group name is applied to several ruins. The "talkative tree rings" enabled the explorers to date each ruin of the groups studied. Thus, in the Mesa Verde group, Cliff Palace is dated 1073; Oak Tree House, 1112; Spring House, 1115; Balcony House, 1190-1206; Square Tower House, 1204, and Spruce Tree House, 1216 and 1262.

Tree Enters Life Events in Its Diary

Explaining the procedure by which the tree-ring calendar was worked out, Dr. Douglass writes:

"The method which we have used in extending the historical calendar of the Southwest is the outcome of a long attempt to read the diaries of trees. Every year the trees in our forests show the swing of Time's pendulum and put down a mark. They are chronographs, recording clocks, by which the succeeding seasons are set down through definite imprints. Every year each pine adds a layer of new wood over its entire living surface of trunk and branches.

"If every year were exactly the same, growth rings would tell the age of the tree and little more. Only in rare cases would they record exceptional events of any interest to us. But a tree is not a mechanical *robot;* it is a living thing, and its food supply and adventures through life all enter into its diary. A flash of lightning, a forest fire, insect pests or a falling neighbor may make strong impressions on its life and go into its diary.

"But in the arid regions of our Southwest, where trees are few and other vegetation scarce, the most important thing to man and trees is rainfall. This fact has helped vastly in our dating work, for certain sequences of years become easily recognized from tree to tree, county to county, even from State to State."

Note: The steps leading up to the achievement reported in this bulletin have been presented in the *National Geographic Magazine:* "A New National Geographic Society Expedition." June, 1921; "The Pueblo Bonito Expedition of the National Geographic Society," March, 1922; "Pueblo Bonito, the Ancient," July, 1923; "Everyday Life in Pueblo Bonito." September, 1925; "Beyond the Clay Hills," March, 1924; "The Secret of the Southwest Solved by Talkative Tree Rings," December, 1929.

Bulletin No. 2, January 6, 1930.

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How Uncle Sam Aids the World to Fight Epidemics

THINK of Uncle Sam on board ship. He wears a tall hat and is dressed in a stars and stripes suit; he carries a little black satchel in one hand and grasps a hypodermic needle in the other.

That is the picture that American medicinal export figures paint. Particularly is it the picture presented by the biologicals; that is, the antitoxins, the serums and the vaccines, which have become the largest single item in the extensive ranks of medicinal exports.

American exports of biologicals are expected to top $2,000,000 in value for the first time in 1929.

From Ground Mummy Dust to Frozen Spinal Cords of Rabbits

Approximately one-tenth of the serums, antitoxins and vaccines for humans and animals produced in the United States now go to the near and far ends of the earth. Figures collected by the Department of Commerce will show during 1929, for the first time, what proportion of the biologicals is for animals and what proportion for humans. Estimates for the first eight months indicate that four-fifths of the supplies go abroad to protect humans against typhoid fever, diphtheria, tetanus (lockjaw), rabies, pneumonia, smallpox and the like. The remainder guard animals from the ravages of hog cholera, anthrax, black leg, foot and mouth disease and similar plagues.

The intensive research work of the medical profession in the United States, the high standards of sanitation and precaution set by the Hygienic Laboratory of the U. S. Public Health Service and followed by the giant drug manufacturing companies, combine to make the United States a chief consultant when nations take sick with an epidemic disease.*

Ground mummy dust from Egypt was a favorite drug of Europe until the eighteenth century. The absurdity of this remedy makes us smile. No more strange, but more seriously true, is the fact that the pulverized frozen spinal cords of rabbits, killed by virus in Cleveland or Indianapolis, will save the life of a Chinese bitten by a mad dog in Shanghai.

A Herd of Calves Saves Half a Million Americans from Death by Smallpox

Vaccine, serum and antitoxin production and distribution has sprung up in twenty-five years. Every member of this medical group has been developed since Pasteur's famous discovery of the vaccine to thwart rabies in 1894. Jenner, 100 years earlier, had proved that a mild case of cowpox would make a person immune from smallpox, but Jenner's application of the vaccination principle continued by rule of thumb until Pasteur made his experiments.

While the Revolutionary War was going on 600,000 Europeans were dying annually of smallpox. Probably more American Indians died from that plague than from bullets. Everybody took it. Survivors, white or red, carried pock marks to their graves.

A few hundred calves now annually save half a million Americans from death by smallpox. A few horses, standing patiently in their super-sanitary stalls, contribute the serum that gives hope of blotting out the peril of diphtheria. The

*For the world's contribution to the American drug store shelf see "The Geography of Medicines," *National Geographic Magazine*, September, 1917.

with powerful steam engines, were put into commission. Such steamers are now operated through the gorges by British, American, Japanese, and other foreign companies, but the junks are still in operation too. Since the advent of the gorge steamers, Ichang has grown from 30,000 to 55,000 in population.

The little city seems to be perched high on a bluff during the low water of the winter months, but when the great river is in summer flood, city and stream are on nearly the same level. At times parts of the city have been flooded.

Britain, Japan, Italy and France Also Have Yangtze Gunboats

Although 1,000 miles up the river, Ichang is one of the first cities not on a dead level to be encountered in sailing up the Yangtze Valley. Behind the town hills roll upward, and still farther back tower mountain peaks. It is in forcing its way through this mountain range that the river has formed the great gorges.

The United States and the other powers have been patrolling the Yangtze as far as Ichang since shortly after that port was opened to trade in 1877. When steamboats began to ascend the rapids in 1901, the gunboat patrol to the upper river followed. In recent years only two United States gunboats, the *Palos* and the *Monocacy*, have been engaged in the up-river patrol, while the lower river was protected by sea-going cruisers.

The six new American gunboats are the *Guam*, the *Tutuila*, the *Palay*, the *Oku*, the *Luzon*, and the *Mindanao*. Three of them have a draft of 5 feet 3 inches, and three a draft of 6 feet. All six are able to pass through the gorges at high water, and the shallower draft vessels even at low water. In addition to the six American gunboats on the Yangtze, eight are now maintained by Great Britain, seven by Japan, and two each by France and Italy.

Bulletin No. 3, January 6, 1930.

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BACK POWER VERSUS STEAM POWER

Native trackers are still employed to track boats through the swift waters of the Yangtze gorges. The trackers now find competitors in shallow draft steamships which carry much of the vast trade on China's greatest river. Navigation on the Yangtze is very hazardous, and many steamers have been wrecked on the rocky shores.

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French Give up Koblenz Post once Held by American Soldiers

POST by post, the French army surrenders the Rhine. The United States forces left in 1923. The last British troops returned to England last month.

Koblenz (Coblenz), where French troops took over the American post, has now been evacuated, the French tri-color hauled down in Ehrenbreitstein fortress, and the German flag raised.

The traveler finds that there is little wonder that American soldiers liked their assignment to Koblenz. Few cities and towns, even in the Rhine Valley, enjoy the picturesque setting of Koblenz. For many miles above and below the city, the Rhine shore is studded with quaint villages, like gems strung on a gracefully curving string. Behind them, well-kept vineyards, sources of the famous Rhine wine, clothe the steep river banks from the village backyards to the foot of massive walls of castles that a few centuries ago were the gay gathering places of some of the great and near-great of Germany.

Once Known as Confluentia

From the opposite shore, or from the rail of a Rhine river boat, Koblenz displays no evidence that there was a town on its site 2,700 years ago. A colossal equestrian statue of Kaiser Wilhelm I overlooks the Rhine from the junction point of the Moselle and Rhine rivers. From this point to the opposite end of the city, the Rhine shore is lined with shaded promenades and numerous grassy parks.

No sooty smokestacks and warehouses are visible to mar the skyline of modern buildings and lofty church steeples. There is a landing place on the riverside, but it is spotlessly clean and free from unsightly piles of cargo. Koblenz is a great wine market, but after viewing the fine buildings, and palatial residences set amid wide lawns, travelers search for other evidence of the city's livelihood. On the Moselle banks they find it. Barges constantly come and go from the quays, and a visit to the near-by streets reveals busy piano, paper and dye factories, and chemical laboratories. On the riverside are small yards from which slip some of the boats and barges that ply the Rhine.

Along the Moselle banks also are a few narrow, crooked streets, lined with venerable houses, business buildings and churches—all that remains of old Koblenz, formerly Confluentia, so named because of its situation at the confluence of the Rhine and Moselle.

Stars and Stripes on Fortress Dominated City

The church of St. Castor, founded eleven centuries ago; the Liebfrauen Church, a thirteenth century structure; and the municipal picture gallery, formerly an old castle, are a few of the interesting historic gems found within the site of the once walled town.

A pontoon or boat bridge crosses the Rhine leading to Ehrenbreitstein fortress on the east bank of the Rhine. The Stars and Stripes flew over Ehrenbreitstein from December, 1918, to January, 1923. Beautiful panoramas of the Rhine and Moselle valleys and a splendid bird's-eye view of Koblenz are ample rewards for a climb to the fortress whose walls rise 385 feet above the Rhine.

Bulletin No. 5, January 6, 1930.

chances of recovery of a child or an adult taken sick with diphtheria twenty-five years ago were only 2 to 1; now, by virtue of the few horses, a diphtheria patient's chances are 10 to 1. Medical authorities believe that proper cooperation by parents and doctors can reduce the diphtheria death rate to nil.

Cattle, horses, snakes, rabbits and guinea pigs are the living machines of the biologicals industry. They manufacture precious products worth $20,000,000 annually.

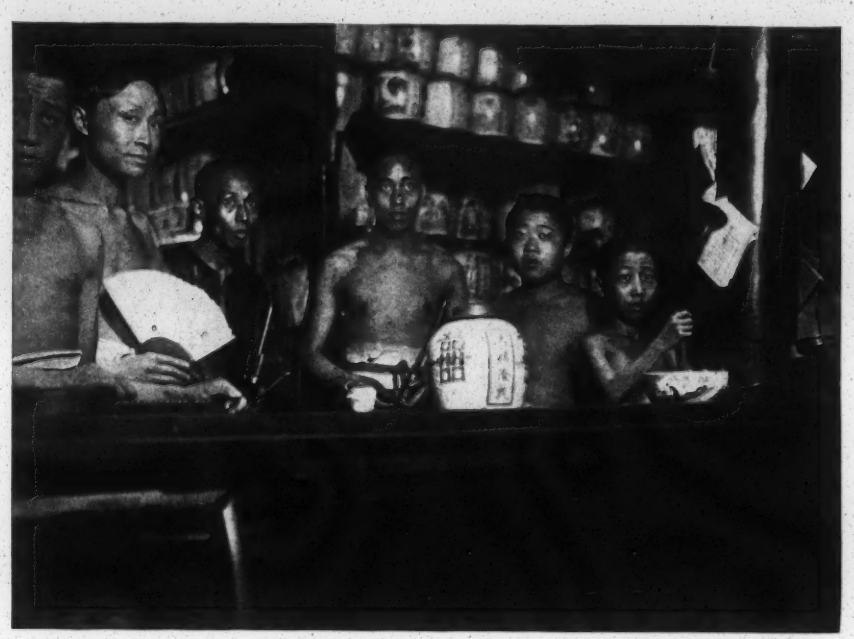
Guinea pigs deserve to be included in the list although they are rarely, if ever, producing units of the biologicals business. Guinea pigs are to biologicals what scales and chemical analyses are to other industries. New lots of serum and vaccine must be tested for quantity and quality on guinea pigs before they are released for use in human beings.

One buys a pound of salt, a 10 per cent solution of iodine and chemically certified milk, but one buys, it may be said, a guinea pig's worth of antitoxin. The antitoxin unit is defined as "that amount of antitoxin which just suffices to protect a guinea pig of 250 grams weight against 100 times the minimal lethal dose of diphtheria toxin."

Vaccine, serum and antitoxin are three confusing words. Vaccines contain limited numbers of disease-causing bacteria (dead or alive), which are introduced into the body in such numbers that the body builds up a resistance against them and also against chance infection by similar disease bacteria. Antitoxins are antibodies built up to produce this resistance. Serum, which is lymph separated from red corpuscles of blood, usually is obtained from blood of horses.

Certain bacteria give off toxins which poison the body, as in diphtheria cases. Diphtheria, induced by man in horses, results in the creation within the horse's blood stream of antitoxins which offset the poisoning effect of the toxins. These antitoxins, drawn from a horse in serum and introduced into humans, help the human body resist the toxins originating in bacteria that the body may harbor.

Bulletin No. 4, January 6, 1930.



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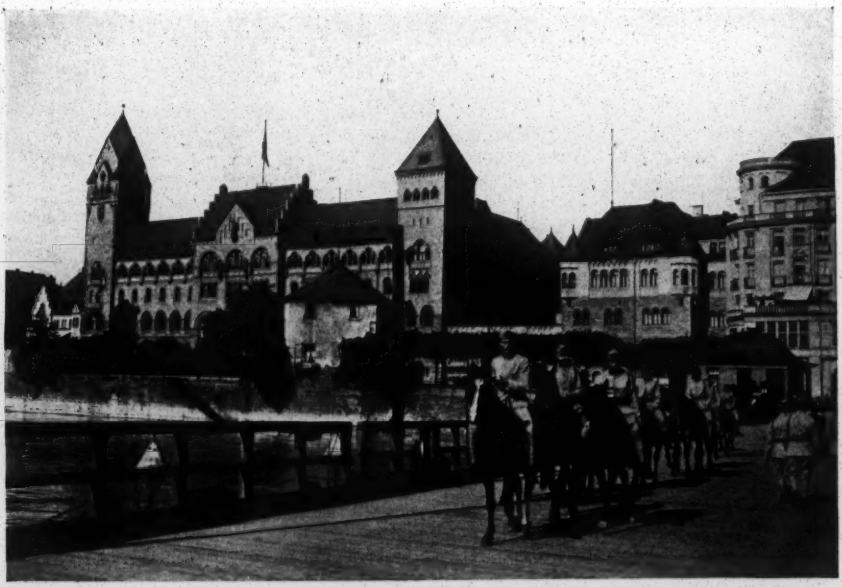
THE CHINESE DRUGGIST AND HIS ASSISTANTS



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A SIGHT THE GERMANS WILL SEE NO MORE

French troops pass over the bridge of boats at Koblenz to the fortress Ehrenbreitstein. These troops have now been recalled to France.

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